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Dear Washington Chair Cathy McMorris Rodgers and Ranking Member Frank Pallone, Jr.,

Thank you so much for the opportunity to appear before the Subcommittee on Oversight and Investigations on Wednesday, June 7th, 2023, at the hearing entitled, "Looking Back Before Moving Forward: Assessing CDC's Failures in Fulfilling its Mission."

Below you will find my responses to the questions sent to me June 29th, 2023.

Sincerely,

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Responses to Congressional Questions
From Tracy Beth Høeg, MD, PhD
7/12/2023

The Honorable Morgan Griffith

1. During the hearing, you mentioned that there was no correlation between opening schools and an increase in community spread in Sweden. Is there any data on how many children who attended school in Sweden died due to COVID-19?

The most recent data from the Swedish Folkhälsomyndigheten estimate of deaths due to COVID-19 in children and young people ages 0-19 through June 5th of 2023 is 23.

I do not have data on whether these children were attending school however school is compulsory in Sweden for 10 years starting at age 6.

The link can be found here(<https://www.socialstyrelsen.se/statistik-och-data/statistik/statistik-om-covid-19/>)

The spreadsheet with the Swedish COVID-19 mortality data is available here:

https://docs.google.com/spreadsheets/d/1paQdbXSniVAGkDbcnbuYZCSqJ0u_w9Pr/edit#gid=1848499033

“Antal avlidna i covid-19”= number dead from covid-19

a. If yes, is this data comparable to school aged children in the United States who died from COVID-19?

The best estimate we have comes from CDC Wonder data (1). This database is able to separate out deaths where COVID-19 is listed as the underlying cause of death. In other words, it can crudely differentiate deaths “from” rather than “with” COVID-19 based on the listed underlying cause of death on the death certificate. They list a total of 1476 deaths attributable to COVID-19 through June 17th, 2023 for 0-19-year-olds. This database relies on death certificates from NCHS (National Center for Health Statistics).

Looking at the 0–17-year age group (children only) there were **1124 deaths total** listed as having COVID-19 as “underlying cause of death” in the United States through June 17th, 2023.

302 of there were in infants < 1 year meaning there have been **822 total deaths in 1–17-year-olds**.

In summary:

Ages 0-17: 1124 deaths due to* COVID-19

1-17:822 deaths due to* COVID-19

*This is with the caveat that there is room for error in how death certificates are completed.

CDC Wonder estimated that for the 1476 0–19-year-olds had COVID-19 listed as the underlying cause of death. The numbers by age group and multiple vs underlying causes of death can be found here (compiled by Kelley Krohnert):

https://docs.google.com/spreadsheets/d/1gFgF_AMYLEpwP6L_KwA3S_3qDJ3dUxx5OReQVgKijmM/edit#gid=0

The age group of 0-19 was used for ease of comparison with Sweden.

For comparison with Sweden, there are about 2.2 million children in Sweden with 23 deaths and 74.4 million in the US and 1476 COVID-19 deaths for 0-19-year-olds is 64x higher than the # in Sweden for 0-19-year-olds but Sweden is only 34x smaller in terms of population. The 1476 statistic is 64x what was reported in Sweden so our COVID-19 death rate was approximately 1.9-fold higher in the US than in Sweden. Thus, the US had almost a 2-fold higher COVID-19 death rate in 0–19-year-olds than Sweden based on the estimates above. It is unknown if this is due to differences in underlying health or reporting.

2. Does the United States have an accurate death count of deaths related to COVID-19? If so, what is the accurate number?

The estimate we have from the CDC Wonder dataset where COVID-19 is the underlying cause of death is **980,643** deaths through 6/17/2023 (<https://wonder.cdc.gov/mcd-icd10-provisional.html>)

There are 1,133,517 death certificates for all ages where COVID-19 is listed anywhere on the death certificate.

The 908,643 can be viewed as the number of deaths “from” COVID-19.

However, the use of CDC Wonder has some limitations because the causes of death have not been verified but are based on search term match with the listed underlying cause of death on the official death certificate.

The US could obtain a more accurate estimate of deaths due to COVID-19 by individually evaluating and validating death certificates as countries like Finland and Denmark have done. Denmark has a peer-reviewed publication (2) explaining their results.

Denmark found that 45% of their total COVID-19 deaths were “with” rather than “from” COVID-19 over the course of 2020-2022. Contrast this with the current US estimate based only on searching for COVID-19 as a term in the “underlying cause of death” on the death certificate where only 13% of total COVID-19 deaths were incidental. In 2022, incidental deaths rose to 75% in Denmark.

If we performed individual evaluation and validation of death certificates in the US were done, the current death count of 908,643 deaths might decrease substantially, perhaps by over 30% (45% of their deaths were incidental after their validation compared with 15% of our deaths being incidental before death certificate validation, so $45-15=30\%$) based on the data from Denmark described above (2).

a. If not, why do you think we do not have an accurate death count from COVID-19?

See above.

3. Are there any studies that analyzed the transmission rate for teachers in Sweden when they kept their schools open?

I am not aware of specific Swedish data about transmission to teachers, but a Correspondence (3) published in the *New England Journal of Medicine* explained a total of 20 school teachers in Sweden were treated in the intensive care unit (ICU) for COVID-19 with no deaths through June 30th 2020. School teachers were found to have a significantly lower relative risk of ICU admission compared with other occupations of 0.43 or 43% the risk (95% CI, 0.28-0.68).

Another peer-reviewed publication from Norway (4) looked at two counties (Oslo and Viken with 1.8 million inhabitants combined) where schools were fully open between the 28th of August and 11th of November 2020 and found only one teacher was infected in school. They looked at grade schools with children up to age 14 and clarified in the study “use of facemasks is not recommended in schools in Norway” (for children or adults).

a. Did the teachers get more infected on average than nonteachers?

To my knowledge, this particular question about infection rate has not been described but in terms of severe disease, I detailed above that in Sweden school teachers were less likely to have severe COVID-19 than other professions even with health care providers excluded (3).

Data from the United Kingdom (5) found regarding COVID-19 death rates that schoolteachers were at lower risk of death from COVID-19 than non-teachers of the same age and sex, specifically 41% lower for males and 42% lower for females.

Whether these teachers were infected in school or outside of school was not described.

4. Is there data on how many teachers died due to COVID-19?

The NCHS and CDC Wonder databases do not provide information on causes of death by occupation. To my knowledge, there is no reliable dataset with this information for the United States. Lists published online (6) using newspapers and social media accounts are of unknown validity if death certificates are not used.

It is also important to note that three large US studies looking at in-school transmission (from North Carolina (7), Wisconsin (8) and Utah (9)) in Fall of 2020 (with the Utah study extending through January

of 2021), identified only **one** instance of school-associated transmission to a teacher/staff member in all three studies which included over 100,000 students and staff. These findings suggested together that, at least through January of 2021, teachers were substantially more likely to be infected outside of school than inside school. One of the studies published in the CDC's journal (8) found infections were over 25x more likely to occur outside of school than inside of school. In other words, the teachers who unfortunately did die were more likely to have caught COVID-19 in the community or at home than at school, at least through January of 2021.

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